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# GUEST EDITORIAL

## The Surgical Pathology Report: Standardizing the "Gold Standard"

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One enduring end-product of all oncologic surgery is the surgical pathology report. It is this document which helps determine a patient's prognosis as well as future therapies, including entrance into or exclusion from standardized or experimental protocols. Although much depends on this report, until recently, there has been surprisingly little attempt at standardization of reporting format for various malignancies. Given the particulars of training programs and individual styles, pathology reports will vary in organization and terminology. Of particular concern, however, is the omission of critical pathologic information, regardless of the format used. This can result in incomplete communication of pathologic information to clinicians which, in turn, can compromise patient care. The problem becomes compounded when all parties utilizing pathology reports are considered. In addition to clinicians, hospital and state tumor registries, central data collection for research and protocols all depend on accurate and complete pathologic information.

An interinstitutional study of 532 laboratories under the auspices of the College of American Pathologists in 1991 analyzed pathologic information derived from nearly 16,000 surgical pathology reports of resected colorectal carcinomas [1]. Somewhat surprisingly, this article represented the first study specifically designed to assess reporting differences amongst surgical pathologists, differences which could result in inadequate communication of pathologic findings to surgeons and oncologists. After analyzing the results, the author discovered that essential parameters such as histologic margin involvement and lymph node status were not routinely incorporated into the final surgical pathology report at a significant number of institutions.

In 1992, citing the multiple goals of increased accuracy, consistency and interinstitutional uniformity, the Association of Directors of Anatomic and Surgical Pathology recommended guidelines for the creation of more complete surgical pathology reports [2]. In addition, the College of American Pathologists and the American Society of Clinical Pathologists have also made efforts toward standardizing pathology reporting. Rosai, in his article on standardization in surgical pathology, suggested several avenues to this end, including the use of templates, checklists, and synoptic reports [3]. Checklists, in particular, provide a straightforward method of insuring inclusion of all relevant information, and are easily implemented, particularly when pathology laboratories have computerized databases in place. In fact, in the study on colorectal carcinoma reporting, the one practice parameter which was most closely associated with complete reports was the use of a checklist. Unfortunately, this practice was subscribed to by only 12.5% of responding institutions.

While the issue of reporting format is clearly an important one, there is evidence that not only does reporting differ from institution to institution, but actual tissue handling and processing may differ as well. An example of this became evident recently when data were analyzed for a study of trends in breast carcinoma size, stage and nodal status as a result of mammographic screening [4]. Cases from the New England Deaconess Hospital (NEDH), a largely tertiary teaching hospital in Boston, Massachusetts and Mount Auburn Hospital (MAH), a community teaching hospital in Cambridge, Massachusetts were compared. While parameters such as maximum diameter of invasive carcinoma, ductal carcinoma-in-situ as a proportion of all breast cancers, and the proportion of low-stage (T1a and T1b) tumors were remarkably similar between the two hospitals, the data for nodal involvement were, at first, puzzling.

Data were analyzed in three time periods for low-stage tumors. From 1979–1983, 19% of axillary dissections contained positive lymph nodes at New England Deaconess Hospital (NEDH), whereas 14% were positive at Mount Auburn Hospital (MAH). From 1984–1988, there

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were 12% positive nodes at NEDH and 7% at MAH. However, from 1988–1993, the node positivity rate at NEDH was 10%, whereas the number of positive nodes at MAH jumped to 24% (B. Cady, personal communication). Significantly, sometime between 1988 and 1989, the method by which lymph nodes were processed changed at MAH. A standard method for processing axillary lymph node dissections from women with breast carcinoma involves taking only one tissue section of a node, ultimately resulting in histologic examination of only one portion of the node. The entire node is examined if it can fit into a tissue-processing cassette, measuring ~3 × 2.5 cm. After paraffin embedding, one slide (level) is cut and stained with hematoxylin and eosin. This protocol is utilized at many Boston area hospitals and was also in place at MAH prior to 1988. Since then, all nodal tissue at MAH is embedded and three levels of each node are cut and stained for histologic review. Although this represents indirect evidence, it seemed plausible that the new tissue handling technique might be responsible for an increased rate of detection of lymph node metastases at MAH.

This hypothesis was further examined in a study by Lester et al. [5] by analyzing all positive nodal metastases at MAH in 1994. All positive lymph nodes from 41 node positive women were examined (107 nodes). Specifically, we were interested in whether metastases were present in all tissue sections and in all levels, since these represented the changes instituted at MAH after 1988. Results were divided into macrometastases (defined as being $\geqslant$2 mm) and micrometastases (<2 mm), since there is conflicting data regarding the clinical significance of micrometastases. The results indicated that 13% of all positive lymph nodes with macrometastases were not present in all tissue sections, but when present were observed in all levels. The results were even more striking with micrometastases, with 59% not present in all tissue sections and 57% not present in all levels. We concluded that macrometastases could have been missed in 24% of the patients in this study if less than the entire node had been processed, and the number of micrometastases detected was increased by 100% by examining all tissue sections and increasing the levels examined from one to three. Methods for tissue handling also have been addressed by the College of American Pathologists and the Association of Directors of Anatomic and Surgical Pathology, but clearly there is still room for discussion even on specimens as routine as axillary node dissections.

Why do these differences exist in a discipline widely known for producing the diagnostic ‘‘gold standard’’ of medicine? Part of the problem may stem from the ever-increasing amount of information considered important in reports—the more information required, the more likely details will be omitted. Another important contributing factor is the changing nature of clinical investigation. As it becomes apparent that specific histopathologic variables are valid predictors of clinical outcome, that information must become available to both the oncologic community and to practicing surgical pathologists. In addition, literature that is widely read and accepted by one group of specialists may not ‘‘cross over’’ and be incorporated into the practices of another group of specialists. Regional differences are also important as oncologists in one area may demand one set of pathologic findings for a particular tumor type, yet another group of oncologists 100 miles away may find the particular parameter noninformative.

What is the solution to the problem of standardization in surgical pathology? Clearly, the initiatives taken by the major pathology organizations are an important first step, with agreement by all that guidelines, whether in the form of checklists or in some other form, need to be routinely utilized by pathologists. There must be a minimum standard of information routinely available on all surgical pathology reports. Second, rather than chase increasingly exotic and expensive although unproven biologic markers, perhaps more careful attention should be paid to routine processing methods currently in place for tumors and lymph nodes, since, for the most part, basic morphologic parameters have remained the most valid predictors of clinical outcome. Standardization of such simple methods of practice as the amount of nodal tissue submitted for histology or the number of levels of slides examined may prove to be a better and more cost-effective tool in managing oncologic patients. Finally, whatever processing or reporting method is used, the surgical pathology report should be considered a flexible and dynamic document to accommodate advances in our understanding of prognostic factors. There should be active communication among the surgical, oncologic (including radiation oncology), and pathology communities regarding new findings in order to keep up with increasing amounts of information, not all of which is prognostically or therapeutically important. Although clearly this must happen on the national level, a good start would be at hospital tumor boards or during formal or informal interdepartmental conferences. All of these efforts move us forward toward our goal as physicians of working in concert toward improved patient care.

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